

In re: Sung-Yung Lee, et al.
Application Serial No.: 10/650,344
Filed: August 28, 2003
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REMARKS

This amendment is submitted in reply to the Official Action mailed October 5, 2004 ("the Action"). Claims 1-35 are pending in the application. Claims 1-9, 21-32 and 34 stand rejected in light of U.S. Patent No. 6,458,284 to Kashihara ("Kashihara"). Applicants respectfully disagree as will be discussed below.

Allowed and Allowable Claims

Applicants acknowledge with appreciation, the Examiner's allowance of Claims 10-20. The Examiner also states that Claims 33 and 35 recite allowable subject matter and would be allowable if rewritten into independent form including all of the limitations of the base claim and any intervening claims. Applicants have amended Claims 33 and 35 to incorporate the subject matter of original base Claim 32 to place them in condition for allowance, which action is respectfully requested.

Claim Informalities

Applicants have amended Claims 29 and 31 to overcome the noted informalities.

Information Disclosure Statement

The Action states that a copy of the figures for the Korean publication cited on a Form PTO 1449 in an Information Disclosure Statement ("IDS") submitted in May of 2004 were "not included with the [information disclosure] statement". Applicants have been unable to verify whether a complete copy of the reference was submitted. However, the stamped postcard states that "one reference and English abstract thereof" was submitted. Thus, Applicants believe that a complete copy of the reference was previously submitted. Applicants are attaching another copy of the reference herewith (7 sheets). Although no fee is believed due, the Commissioner is hereby authorized to charge any additional fee that may be required for the prior submitted IDS and reference to our Deposit Account No. 50-0220.

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The Art Rejections

The Action states that Claims 1-9, 21-26, 28-32 and 34 stand rejected under as being anticipated by Kashihara. The Action also rejects Claim 27 as being obvious in view of Kashihara. Applicants respectfully disagree.

More particularly, with respect to the anticipation rejections, the Action states that Kashihara discloses the claimed features and refers to Figure 12 to support this position. Kashihara proposes a lower electrode configuration whereby a barrier metal layer 3 underlies the lower electrode 2. However, this configuration also shows a lower electrode sidewall 8 that extends angularly out and downward from the top surface of the lower electrode to the interlayer insulation film 5. Further, this sidewall 8 is necessary because the "lower electrode sidewall 8 is formed to prevent the barrier metal layer 3 from contacting the dielectric layer 9." (col. 1, lines 34-36).

In contrast, as shown, for example in Figure 4 of the instant application, the sidewalls of the oxidation barrier pattern 3 and the lower electrode 117a are substantially straight (vertical in the orientation shown) and no supplemental sidewall is required. Figure 4 also shows that the sidewalls of the lower electrode and oxidation barrier portion has a dielectric film 120 conforming thereto, also being substantially straight (vertical in the orientation shown). Claims 1, 21, 26 and 32 have been amended to recite a substantially straight dielectric film in a sidewall region of the device.

Claim 1 recites in-part:

a dielectric film disposed over the lower electrode sidewalls, wherein the dielectric film conforms to the lower electrode sidewall and the oxidation barrier sidewall in a substantially straight line orientation.

Claim 21 recites in-part:

wherein the dielectric layer is oriented in a substantially straight line that conforms to the external perimeter shape of the at least one sidewall of the lower electrode and an adjacent underlying sidewall of the oxidation barrier pattern lower electrode platform.

Claim 26 recites in-part:

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wherein the dielectric layer has a substantially vertical configuration about sidewalls of the lower electrodes.

Claim 32 recites in-part:

forming a dielectric layer over sidewalls of the lower electrode and oxidation pattern proximate thereto in a substantially vertical orientation.

Applicants also submit that the etch stop layer as claimed in Claim 34 is also a patentable feature. This subject matter is supported by the application (shown as feature 105, Figure 4).

Regarding the obviousness rejection of Claim 27, Applicants respectfully disagree. As noted above, Kashiwara forms curvilinear sidewalls onto its lower electrode, which prevents the configuration from being able to be cylindrical as claimed. In fact, Kashiwara teaches away from such a feature, as the sidewalls are used to prevent contact with the dielectric.

In view of the foregoing, Applicants respectfully submit that the claims are patentable for at least the reasons noted above.

New Claims

Applicants have added new Claims 36-45 to depend from the independent claims and recite the generally cylindrical configuration or the cross-sectional configuration of the lower electrode in order to form a more complete claim set. Entry and consideration of these claims are respectfully requested. The claims are supported by the application and figures.

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Conclusion

Applicants respectfully submit that this application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,

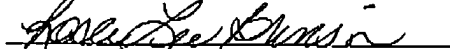


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Rosa Lee Brinson